

# Processing Fee Cost Survey

## WORKSHOP PRESENTATION



Division of Recycling  
Market Research Branch

# Agenda

1.0 Introduction

2.0 Cost Survey Background

3.0 Cost Survey Methodology

4.0 Cost Survey Results

5.0 Analysis of Cost Survey Results

6.0 Questions

# 1.0 Introduction

1.1 DOR Management and Contractor Team

1.2 NewPoint Group Contractor

1.3 Purpose of Cost Survey

1.4 Cost Survey Timing

## 1.1 Introduction

# DOR Management and Contractor Team

- Jim Ferguson, DOR Assistant Director
- Chuck Seidler, Market Research Branch Manager
- Chris Goetzke, Market Statistics Section Supervisor
- Graham Johnson, Cost Survey Project Manager
- James Gibson, Ph.D., NewPoint Group Director
- Wendy Pratt, NewPoint Group Senior Consultant



## 1.2 Introduction

# NewPoint Group Contractor

- This processing fee cost survey was performed under contract by NewPoint Group Management Consultants for the Division of Recycling
- NewPoint Group has extensive experience with the processing fee cost survey, dating back to inception of the AB 2020 program

## 1.3 Introduction

# Purpose of Cost Survey

- Most recyclers are required to redeem all beverage container material types
- Scrap values of glass, plastics, and bi-metal are not sufficient to cover their cost of recycling
- Costs are subsidized by paying recyclers a processing payment (PP)

$$PP = (\text{Cost of recycling} + \text{Reasonable Financial Return}) - (\text{Scrap Value})$$

- Cost of recycling was determined by this cost survey

## 1.4 Introduction

# Cost Survey Timing

- Processing fee cost survey was used to estimate the weighted-average certified recycler costs per ton for 10 beverage container material types
- Recycler costs were surveyed in 2003 (April through September), using recycler calendar year 2002 financial statements, labor information, and recycling volumes
- Recycler costs in this survey are used for the processing fee calculation, effective January 1, 2004

# 2.0 Cost Survey Background

2.1 Sample and Census Cost Survey

2.2 Sample for High Volume Materials

2.3 Census for Low Volume Materials

2.4 Overall Survey Size



## 2.1 Cost Survey Background

# Sample and Census Cost Survey

- Approximately 700 certified recyclers in the population, a complete census was not possible for the high volume materials
- Sampling was used for aluminum, glass, PET #1, and HDPE #2
- Complete census was used for Plastics #3 to #7
- A combination sampling/census was used for bi-metal
- Data was managed statistically to an 85% confidence level, and a +/- 10% error rate

## 2.2 Cost Survey Background

# Sample for High Volume Materials

- A 12% over-sample was used to accommodate the possibility of lost sites
- The final sample size was 181 recycling centers
  - 136 random sites, by three strata, for aluminum, glass, PET #1, and HDPE #2
    - Strata 1 > 500 tons of glass (50 sites)
    - Strata 2 > 150 tons of glass (47 sites)
    - Strata 3 < 150 tons of glass (39 sites)
  - 45 non-random sites for plastics #3 to #7 consisting of all available recycling centers reporting #3-#7 volume during 2002 not already included in random selection

## 2.3 Cost Survey Background

# Census for Low Volume Materials

- For plastic resins #3 to #7, there were 58 total sites reporting volume for 2002
  - Surveyed all available recycling centers reporting #3-#7 plastic volume in 2002
- For bi-metal, there were only 113 total sites reporting volume for 2002
  - Used all bi-metal information available from 65 sites
    - 30 sites in the random sample
    - 35 sites in the non-random sample

## 2.4 Cost Survey Background

# Overall Survey Size

- Largest sample size ever undertaken by DOR for the cost survey, about 25% larger than previous samples
- First effort to determine costs for bi-metal, HDPE, and #3-#7 plastics

# 3.0 Cost Survey Methodology

3.1 Cost Survey Process

3.2 Labor Allocation Model

3.3 Site Cost Determinations

3.4 Quality Control Reviews

3.5 Measurement of Costs by Material Type

3.6 Indirect Cost Allocation Sub-Models

3.7 Statewide Weighted-Average Costs



### 3.1 Cost Survey Methodology

# Cost Survey Process

Obtained financial statements and classified site costs into categories

- Non-allowable
- Direct labor
- Other labor
- General business overhead
- Transportation
- Rent
- Depreciation
- Property taxes
- Utilities
- Supplies
- Fuel
- Insurance
- Interest
- Maintenance/repairs

## 3.2 Cost Survey Methodology

# Labor Allocation Model

- Labor allocation model was developed, refined, and proven over the past 10 years
- Identified and allocated costs directly attributable to specific materials, or groups of materials
- Reviewed personnel records for labor expenses
- Interviewed site management to determine allocation of total labor hours per employee
- Allocated each worker's time to
  - Recycler, processor, or other business
  - Direct yard labor, or all other labor
  - Specific CRV materials, and non-CRV materials

### 3.3 Cost Survey Methodology

# Site Cost Determinations

- Reconciled labor expenses in labor records to the financial statements
- Allocated indirect costs based on labor allocations
- Summed all direct and indirect costs

### 3.4 Cost Survey Methodology

## Quality Control Reviews

- On-site (field) reviews
  - Audit team verified and reviewed all data at each site
- Office reviews performed after each site visit
  - Field audit team of two, one generally a CPA
  - Independent audit team of two
  - Audit manager, CPA
  - NewPoint business/program analyst

### 3.5 Cost Survey Methodology

## Measurement of Costs by Material Type

- Direct costs were identified and applied to each of the ten CRV material types where applicable
- Labor allocation method was used to allocate employee hours by three material type categories
  - Aluminum/bi-metal
  - Glass
  - All plastics
- Remaining indirect costs for aluminum/bi-metal and all plastics were allocated to separate material types based on operational and material handling factors employed in two new sub-models



### 3.6 Cost Survey Methodology

# Indirect Cost Allocation

## Sub-Models

- The sub-models utilized four key operational/material handling factors based on extensive field research
  - Weight factor (total tonnage handled)
  - Container factor (number of containers handled)
  - Volumetric factor (average container size for the material type)
  - Commingled factor (proportion of non-CRV containers)
- The weighting of the operational/material handling factors was established based on analyzing sensitivity and median costs using test data

### 3.7 Cost Survey Methodology

## Statewide Weighted-Average Costs

- Each material type cost per ton was based on a statewide weighted-average calculation
  - Weighted average by strata for aluminum, glass, PET #1, and HDPE #2
  - Population weighted average for PVC #3, LDPE #4, PP #5, PS #6, and Other #7
  - Simple weighted average for bi-metal
- The weighted-average calculation is required by statute

# 4.0 Cost Survey Results

4.1 2002 Statewide Recycler Costs Per Ton

4.2 2002 Costs Compared with 1999 Costs

4.3 2002 Sample Error Rates and Sample Sizes

4.4 2004 Processing Payments Compared with 2003

4.1 Cost Survey Results

# 2002 Statewide Recycler Costs Per Ton

with Reasonable Financial Return

	<i>Material Type</i>	<i>Recycler Cost Per Ton</i>
1.	Glass	\$81.85
2.	Aluminum	429.64
3.	PET #1	491.87
4.	Bi-Metal	521.15
5.	HDPE #2	662.40
6.	Other #7	778.70
7.	PVC #3	1,091.69
8.	PP #5	1,516.52
9.	LDPE #4	3,409.76
10.	PS #6	6,293.96

## 4.2 Cost Survey Results

# 2002 Costs Compared with 1999 Costs

Costs per Ton with Reasonable Financial Return (RFR)

<i>Material Type</i>	<i>2002</i>	<i>1999</i>	<i>% Change</i>
Glass	\$81.85	\$88.52	(7.5)%
Aluminum	\$429.64	\$363.62	18.2%
PET #1	\$491.87	\$599.51	(18.0)%
Bi-Metal	\$521.15	<i>Same as aluminum</i>	



# 4.3 Cost Survey Results

## 2002 Sample Error Rates and Sample Sizes (90% CI)

<i>Material Type</i>	<i>Error Rate</i>	<i>Sample Size</i>
Aluminum	7.82%	136
Bi-Metal	7.57%	65
Glass	9.21%	131
PET #1	9.77%	132
HDPE #2	9.78%	119
PVC #3	census	23
LDPE #4	census	11
PP #5	census	11
PS #6	census	12
Other #7	census	49

#### 4.4 Cost Survey Results

## 2004 Processing Payments Compared with 2003

<i>Material Type</i>	<i>Processing Payments to Recyclers (Per Container )</i>		
	<i>2004</i>	<i>2003</i>	<i>% Change</i>
Bi-Metal	3.375¢	2.397¢	41%
Glass	1.993	2.116	(6)
PET #1	1.388	2.292	(39)
HDPE #2	5.210	5.563	(6)
PVC #3	5.505	3.373	63
LDPE #4	4.851	0.826	487
PP #5	11.489	2.571	347
PS #6	4.508	0.460	880
Other #7	3.323	3.469	(4)

# 5.0 Analysis of Cost Survey Results

5.1 PET - CRV Tonnage Recycled & Recycling Cost per Ton

5.2 1999 & 2002 Changes in Cost, Volumes, & Costs per Ton

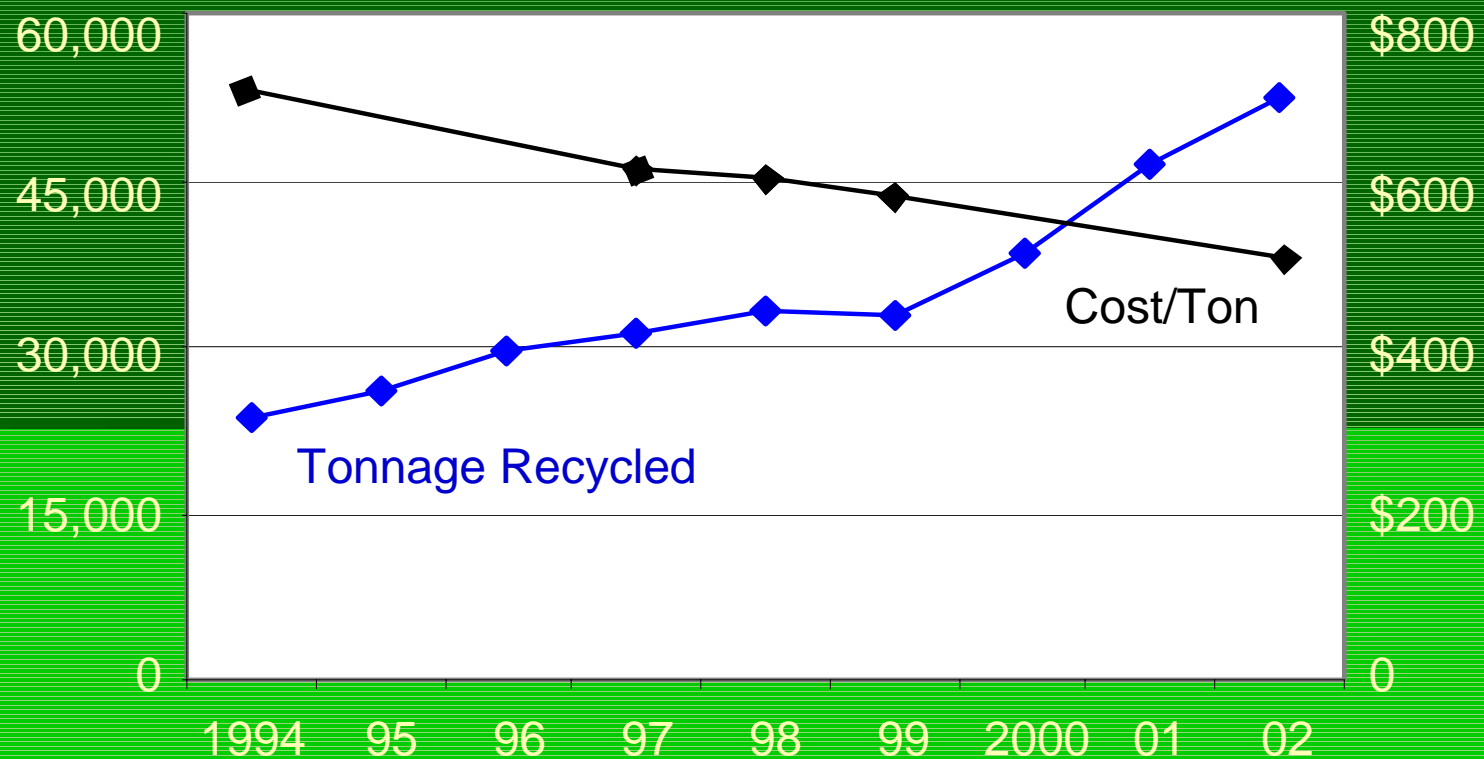
5.3 1999 & 2002 Cost Detail by Strata

5.4 Comments on 2002 Costs per Ton

## 5.1 Analysis of Cost Survey Results

### PET History - CRV Tonnage Recycled & Recycling Cost Per Ton

CRV Tonnage Recycled at Recycling Centers & Cost per Ton



## 5.2 Analysis of Cost Survey Results

# 1999 and 2002 Changes in Cost, Volumes, and Costs per Ton

Material Type	Total Estimated Recycling Costs w/ RFR	Total Volume (tons)	Average Cost/Ton w/ RFR	% Change in Costs	% Change in Volumes	% Change in Cost/Ton
Aluminum 1999	\$29,663,392	81,578	\$363.62	---	---	---
Aluminum 2002	31,061,253	72,296	429.64	4.7%	- 11.4%	18.2%
Glass 1999	20,425,901	230,749	88.52	---	---	---
Glass 2002	18,783,675	229,489	81.85	- 8.0%	- 0.5%	- 7.5%
PET 1999	13,140,660	21,919	599.51	---	---	---
PET 2002	16,459,446	33,463	491.87	25.3%	52.7%	- 18.0%



## 5.3 Analysis of Cost Survey Results

# 1999 and 2002 Cost Detail by Strata

Material Type	Population			Total Population	Cost per Ton			Average Cost/Ton w RFR
	Stratum 1	Stratum 2	Stratum 3		Stratum 1	Stratum 2	Stratum 3	
Aluminum 1999	104	298	426	828	\$303.28	\$303.69	\$503.78	\$363.62
Aluminum 2002	104	282	290	676	399.12	385.42	548.99	429.64
Glass 1999	104	298	380	782	66.92	85.10	197.63	88.52
Glass 2002	105	282	260	647	65.83	88.26	142.06	81.85
PET 1999	104	297	392	793	510.03	515.74	986.42	599.51
PET 2002	104	282	265	651	409.46	484.46	715.28	491.87

## 5.4 Analysis of Cost Survey Results

# Comments on 2002 Costs Per Ton

- Number of PET beverage containers recycled more than doubled from 1999 to 2002 and tonnage increased by 53%. During same period, PET measured costs decreased by 18%
- Consistent with PET results, number of aluminum beverage containers recycled between 1999 and 2002 has decreased 5% and measured costs have increased 18%.
- There were 33% fewer low volume centers (stratum 3 sites) in survey population compared with 1999. 2002 results by strata indicate attrition in high cost centers, leaving lower cost centers in the survey population
- Market share shift from aluminum, a high value material with no processing fee, to PET has created structural changes in the recycling industry placing downward pressure on total revenue

# 6.0 Questions

- Questions/Comments
- Concerns/Suggestions